

ABSTRACT

A method and apparatus for correcting vision, including a corneal-pocket keratome device to create a corneal pocket and a lens to be inserted and retained in the corneal pocket to effect correction. The corneal-pocket keratome includes a drive unit having cutting head elements which contact the subject eye during corneal pocket formation. The cutting head elements may be removable and may be disposable. The cutting head elements include a corneal restraint device, which may be a positioning ring to position an eyeball with the cornea protruding through the ring; a keratome blade assembly with a corneal-pocket blade; and may also include an applanation shoe surface to restrain the cornea, in addition or instead of the positioning ring. The applanation shoe may be pivotable away from the surgical area. The corneal-pocket blade may include a guide which travels with the blade. The blade assembly oscillates laterally while extending forward into the cornea to form the pocket, and the amplitude of the lateral oscillation is preferably increased as the blade goes beyond an opening incision into the cornea. Lenses for this invention preferably include a feature to impede accidental lens movement after the lens is disposed within the corneal pocket, which may be a swelling after insertion or a circumferential irregularity. Lenses may be of Fresnel or non-Fresnel type, and may employ annular changes in the index of refraction of the lens material, as well as changes in refractive shape which may be annular or not, to effect variations in focal length for relieving presbyopia, astigmatism, and combinations of those as well as myopia and hyperopia. Drive control and vacuum for the positioning ring are provided under user command by a control unit having user inputs.